ASYLUM FOR WORTHY FREEMASONS AT CROYDON.

The new Asylum for aged and decayed Freemasons is situated in the parish of Croydon, near the South-Eastern Railway, upon a gravelly soil, well drained, and elevated 3 feet above the natural level of the ground. It has a southern aspect, and is surrounded by a terrace and extensive pleasure-grounds.

The building has been erected by subscription, from the design of Mr. S. M. Daukes, architect. It is capable of affording accommodation to thirty-six inmates, allowing two rooms to each, with other suitable domestic conveniences. The contract for the entire building was taken by Messrs. Patrick and Son, builders, Belvidere-road, Lambeth, for the sum of 4,968*l*. At present, however (for want of funds), only the north wing and centre building are completed; and these have cost, owing to considerable additions in the way of ornamental decorations, 3,731*l*. 10s. 7d.; the principal additional expense has been incurred in consequence of its having been considered desirable to add considerably to the height of the foundations, with a view to render the building perfectly free from damp. Immediately over the bay-window of the centre building is placed a bronze tablet to the memory of its founder, Dr. Crucefix, whose portrait is also suspended in the hall of the building. The bay-window above referred to is beautifully glazed with stained glass at the expense of the building committee, who deserve especial commendation for this act of liberality, and whose cyphers are emblazoned in its different compartments.

The style which has been selected is the late Tudor, and the material employed red brick with blue headers and stone dressings. The roofs are covered with tiles laid in an ornamental pattern.

The consecration of the building was celebrated with great masonic pomp and display on the 1st of August, 1850, by the right worshipful brother A. Dobie, provincial Grand Master for Surrey, assisted by nearly 700 members of the order.

The sum of 2,200*l*. is required to complete the building: of this there is invested, in the names of the building committee, 600*l*. and a legacy of 500*l*. to the same object has recently been left by the late Mr. Colville Brown, of Norfolk. A further sum of 1,100*l*. still remains to be collected, and which, amongst so numerous and wealthy a body as the Freemasons, we doubt not will soon be obtained.

A GRAVE QUESTION, IN WHICH DOCTORS DIFFER.

DOES LEAD POISON WITH HARD WATER, OR WITH SOFT, OR WITH BOTH?

Having now (see pp. 54, 55) presented a fair view of the evidence, which, as far as its mixed nature permitted, seems to corroborate and support, or militate more or less in favour of that of Dr. Lyon Playfair, all of whose experiments at the Museum of Practical Geology on water supply are reported to have tended to "prove that perfectly soft water has no action on lead, and that all the solid (hardening) ingredients of water tend to produce and increase the action of lead," we must now review what has been said and done towards the establishment of a conclusion practically the very reverse, or nearly so. And as we have given the place of precedence and honour to the evidence which we regarded as the most influential in favour of the perfect safety of soft water with lead pipes and cisterns, and the imminent danger of hardening ingredients or hard water in similar circumstances; so, we shall now first of all proceed to adduce the evidence which we regard as the most influential in favour of the opposite conclusion, which was *established* (as it was thought) on an extended series of experiments, also purposely gone into in order to decide this important question.

Professor Christison, indeed, appears to have given this subject a much more extended and formal consideration than any chemist or toxicologist who preceded him, if not, indeed, also, than any who has even yet treated of it. In fact, subsequent authorities appear to have chiefly fallen back upon his experiments, the results of which they have in general adopted. And, moreover, it is Christison's opinion that the subject is one which, so far from being exhausted, still demands further careful investigation, in some of its many important aspects not yet treated of.

All that we need here remark as to inquiries previous to those of Christison, is, that although the ancients were well acquainted with the dangerous properties of leaden vessels or utensils, Vitruvius having published (De Architectura, lib. viii. c. 7) a very strong remonstrance against leaden pipes when used for the conveyance of water, and Galen having cautioned his readers continually not to use water that had flowed through pipes of this metal, nevertheless we find nothing but repetitions of these cautions till the end of the last and beginning of the present century; and even in 1823, Paris, though he fully recognised the risk of using lead in water supply, said very little on the subject. Dr. Lambe, of Warwick, however, had first minutely, but not quite correctly, examined it. Guyton Morveau contradicted some of his conclusions; and a few years later (1816), Dr. Thomson, of Glasgow, also treated of it, supporting Dr. Lambe's proposition, that "most spring waters attack lead."

In 1829, Professor Christison first published an extended account of his investigations into the whole subject of the action of different waters on lead. Other authorities followed; but although Christison has since more than once recurred to the question, and drawn pointed attention to its practical importance, and its details, we find even recent writers of note still passing it over with little or no attention. Thus, in 1843, Professor Orfila treats of it in a few lines only, and even these, as Christison alleges, contain several inaccurate statements. Still more recently, we have searched in vain for even a single hint or allusion to it, either in text or note, in Turner's Chemistry, edited by Liebig. Graham appears to say nothing about it. Brande does recognise its importance, as we shall afterwards see; but he not only coincides with Christison in the main, but refers his readers to him for "a good epitome of all that relates to the action of water on lead."

It thus appears that Christison, whether he be right or wrong, is fully entitled to be regarded as the most influential antagonist to Playfair on this *vital* question, which, moreover, it also thus appears, may be said to be only now in course of consideration and discussion as a moot question by no means exhausted,—scarcely even as yet taken up,—by chemical authorities in general. As for the public at large, whom it so deeply interests, we believe that they knew nothing about it, till we called their attention to it in The Builder, since which time the noxious influence of lead in certain cases which have come before them in the daily papers has been fully recognised.

The evidence of Professor Christison, on which the whole subject, as well as its public recognition, may be said to be mainly based, in every sense, therefore, merits serious consideration—in connection with Dr. Lyon Playfair's contradictory evidence, and with the corroborations of that evidence already adduced.

Of the mutual influence of soft water and lead, then, Professor Christison, in his Treatise on Poisons (ed. 1845, p. 517), says—

"Distilled water, deprived of its gases by ebullition, and excluded from contact with the air, has no action whatever on lead. If the water contains the *customary gases* in solution the surface of the metal freshly polished becomes quite dull and white. But if the surface of the water be not at the same time exposed to the air the action soon comes to a close. When the air, on the other hand, is allowed free access to the water, a white powder appears in a few minutes on and around the lead, and this goes on increasing till, in the course of a few days, there is formed a large quantity of white matter, which partly floats in the water or adheres to the lead, but is chiefly deposited on the bottom of the vessel. If this experiment be made with atmospheric air deprived of carbonic acid, the white substance puts on the form of a fine powder, which I find to be a hydrated oxide, * * * but if the surface of the water be exposed to the open air, the substance formed consists of minute brilliant pearly scales * * * a carbonate of lead. * * * The formation of carbonate takes place with considerable rapidity. In 12 ounces of distilled water, contained in a shallow glass bason, *loosely covered to exclude the dust*, 12 brightly polished lead rods, weighing 340 grains, will lose 2¼ grains in 8 days, and the lead will then show evident marks of corrosion. The process of corrosion goes on so long as atmospheric air is allowed to play freely on the surface of the water. In 20 months I have obtained 120 grains from 1 ounce of lead rods kept in 24 ounces of distilled water. * * * It will be inferred from the preceding facts that distilled water for economical use should never be preserved in leaden vessels or otherwise in contact with lead."

Distilled water is, in fact, just water perfectly soft, and the evidence here, therefore, is to the effect that perfectly soft water, in ordinary circumstances, acts immediately and powerfully on lead. Rain-water, moreover, is distilled water, and wherever rain falls therefore and forms streams and springs, it necessarily remains perfectly soft water, unless or until it becomes impregnated with the salts which, as we shall shortly show, are alleged by Christison to preserve or *protect* the water from the influence of lead, instead of *exposing* it to that influence, as evidenced by Playfair. That many spring-waters *are* exceedingly soft, and that many such waters do act on lead, we have already seen asserted. One such case adduced by Christison we may here quote, from an abstract of it already given in The Builder:—

"Perhaps one of the most remarkable of those conclusions to which recent chemical authorities have come is this, that the purest of all water, even were it distilled, is the most likely to act on lead, and thus become contaminated with poisonous matter. In one sense, indeed, this conclusion is not new, or rather some of the facts on which it has been based are of old enough date. At Tunbridge, for instance, in 1814, a plumber, who undertook to supply the town with water, forthwith accordingly laid a line of leaden pipes for a quarter of a mile,—redeemed his contract sure enough,—but nearly poisoned a number of the people, many of whom were seized with lead colic, while one great water-drinker in particular, a lady, lost the use of her limbs for months, until, a natural alarm arising, iron pipes were substituted, and the evil ceased. Mr. Brande, the chemist, found lead in the water which had passed through the pipes, but none at the fountain head; and Dr. Thomson examined the latter, and found it *exceedingly pure*."

Our intention at present, however, is to confine ourselves to the evidence or conclusions of chemists based partly on such cases, and not to enter into any detail of the cases themselves.

As the question is a mixed one, and generally treated as such, in its relation to hard water as well as to soft, in one and the same evidence, as already seen, we shall follow up what Dr. Christison says as to soft water, with his views on the subject of hard water, and with the general results to which he has been led in reference to both.

At page 519 he thus treats "of the action of solutions of neutral salts on lead:"—

"The property which pure aerated water possesses of corroding lead is variously affected by foreign ingredients, which it may hold in solution.

Of these modifying substances none are more remarkable in their action than *the neutral salts, which all impair the corrosive power of water*. Important practical consequences flow from that action; for *it involves no less than the possibility of employing lead for most of the economical purposes to which the ingenuity of man has applied that useful metal*. * * * The preservative power depends on the acid, not on the base of the salt. * * * The general result of these experiments (just before given) appears to be, that neutral salts in various and for the most part minute proportions, retard or prevent the corrosive action of water on lead, allowing the carbonate to deposit itself slowly, and to adhere with such firmness to the lead as not to be afterwards removable by moderate agitation, adding subsequently to this crust other insoluble salts of lead, the acids of which are derived from the neutral salts in solution, and thus at length forming a permanent impermeable screen, through which the action of the water cannot any longer be carried on."

A little farther on he says:—

"Many instances might be quoted of spring

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